Effects of institutional practices on delays in construction – views of Finnish homebuilder families

Effects of institutional practices on delays in construction – Views of Finnish homebuilder families

Housing Studies, Published online 14 Aug 2019. DOI: 10.1080/02673037.2019.1651831

Jaakko Jussila[a]* and Katja Lähtinen[b]

[a]*Department of Marketing and Communications, University of Vaasa, Vaasa, Finland*

[b]*Natural Resources Institute Finland (LUKE), Finland*

Correspondence: Jaakko Jussila, jaakko.jussila@student.uva.fi

For many consumers, buying a home is the most important purchasing decision they will ever make. Although consumer needs are well met in the detached house business, particularly compared to the multi-story house business, deficiencies still exist. These deficiencies are caused not only by companies' strategies, but also by institutional factors discouraging the development and launch of innovative business solutions. The purpose of this study is to provide information on the role of institutional practices in the housing markets and construction sector that cause delays in detached house building processes. The analysis employed qualitative data gathered from homebuilder families by phone interviews in January 2015. According to the results, institutional practices pose many challenges in building projects (e.g., acquiring of building permits and financing). In the future, the project planning phase in particular should be developed (e.g., area construction business models and administrative services) to decrease delays caused by purchasers' lack of decision-making power and administrative skills.

Keywords: housing market institutions, detached houses, consumers, building processes, delays

Mr. Jaakko Jussila is a doctoral student at the University of Vaasa with an M.Sc. in Marketing. He is conducting research on the construction sector and currently focusing on competition dynamics in the prefabricated housing market. For years he has been working with house manufacturers doing market research and helping them to better understand their customers and business environment. While working as a researcher, he is also serving as the editor-in-chief of a magazine that publishes useful information for future homebuilders.

Dr. Katja Lähtinen is Professor in Business Development and Economics (Finnish Natural Resources Institute, LUKE) and Adjunct Professor in Forest Industry Marketing and Management (University of Helsinki) with a PhD from the University of Joensuu, Finland. She is specialized in assessing the competitiveness and sustainability of the forest sector, especially in the context of wood industries. She has published about 40 articles or book chapters in international peer-reviewed publications. In addition, she participates actively in the popularization of science, such as through collaboration with companies and other stakeholder groups.

1. Introduction

This paper analyzes the role of institutional practices in housing causing delays in detached house building processes. Delays are among the most crucial and common obstacles in the building processes, causing potentially high costs for all partners involved (e.g., Zarei et al., 2017). Due to the complexity of the construction projects (e.g., Dubois & Gadde, 2002, Blayse & Manley, 2004), the use of prefabrication has become more common to streamline construction operations for enhancing speed of the processes through more efficient division of work, for example. From the perspective of institutionalization, the standardization of roles and tasks reduces the need for communication and formal documentation, which in turn decreases risks caused by uncertainty (Kadefors, 1995). In this study, we address institutional practices as causes of building delays and suggest solutions for empirical development in detached house building system.

For many consumers, buying a home is the biggest and most important purchasing decision they will ever make (Levy et al., 2008). After making the initial decision, the consumer still has to solve issues related to factors such as the type of property (e.g., a detached house or an apartment in a multi-story building), age of building stock, qualitative characteristics of the dwelling (e.g., floorplan), location and source of financing (Kauko et al., 2002; Koklic & Vida, 2011). The final choice is an outcome of individual factors such as preferences and budget constraints combined with external circumstances like housing market conditions (e.g., supply of houses) arising from different types of institutional practices (e.g., municipality planning and organization of work within and between construction companies) (Levy et al., 2008; Coolen & Hoekstra, 2001; Lindberg et al., 1989; Leishman, 2015).

Regardless of the type of property (i.e., a house or an apartment), the drivers for buying, especially in the case of a new dwelling, are related to expectations for ease of living (e.g., availability of modern housing technologies and no need for renovations) (Hasu, 2018). In

comparison with buyers choosing flats in new multi-story houses, consumers who end up deciding to buy or build a detached house have considerably more power to affect different characteristics (e.g., floorplan, materials) of their homes as a result of differences in business logics and building processes between companies producing houses for the detached and multi-story housing markets (Segerstedt & Olofsson, 2010). Compared with many other countries (e.g., Ball, 1998; Leishman, 2001), detached house construction in Finland are often managed by the homeowners instead of speculative construction by companies (Ruonavaara, 1996a).

Along with decision-making power in the purchase phase, the motivation for choosing a detached house has been found to be connected to the broader social context, such as the prevailing ideal of what constitutes good housing (Marsh & Gibb, 2011). For example, according to a Pan-European study (Norris & Domański, 2009), the quality of Finnish housing is good regardless of the type of home in question. Despite this, living in an owner-occupied detached house has been and still is preferred in Finland, which historically has been caused by Finnish policies and work of non-governmental organizations strongly promoting detached housing as an ideal form of living, especially during the 20th century (Ruonavaara, 1996b). In addition, in Finland owning a house is not only related to social values and norms connected to, e.g., intergenerational family relations, but also wealth reserve acting "as their last resort safety net" (Naumanen & Ruonavaara, 2016). Similarly also in Denmark, for example, the characteristics of detached houses (i.e., style, size and location) have been found to serve as symbols of family-building and position in society for their owners (Gram-Hanssen & Bech-Danielsen, 2004).

According to Gibler & Tyvimaa (2014), socioeconomic changes (e.g., increase in income and wealth) have led to diversification in the housing expectations of customers, which has started to pose pressures to provide more options for personalization in house design. However, they also pointed out that from the perspective of housing companies, factors such

as local regulations, control of buildable land and control of building design discourage the development and launch of innovative business solutions that could further enhance the profitability and customer-orientation of companies. In line with this, it has been found that not only decisions made within building companies, but also politically devised instruments and regulatory factors affect the diffusion of innovations in the construction sector (e.g., Blayse and Manley, 2004). Furthermore, solutions made in urban planning processes at the level of municipalities have had major effects, such as on the possibilities of building companies to strategically renew their businesses (e.g., Lähtinen et al., 2019). Thus, several institutional processes and norms (e.g., social, demographic, economic and legal) (Burke, 2012) governed by actors connected to production (e.g., constructors), consumption (e.g., purchasers) and exchange (e.g., lenders) affect the housing system illustrated with Structures of Housing Provision (SHP) (e.g., Ball & Harloe, 1992).

The construction sector has been broadly criticized for its lack of innovativeness (Vesa, 2014). For example, housing construction in the UK has been accused of being locked in by inefficient traditions of building, even though these shortcomings have been recognized and government policies have been instituted to encourage renewal in the sector (Lovell & Smith, 2010). Similar findings have been made in Denmark, where low productivity and poor quality have been identified as general problems for the whole construction sector (e.g., Kristiansen et al., 2005), and the state has played an active role in promoting innovativeness through interventions and direct legislative actions (Bang et al., 2001; Rasmussen et al., 2017).

Despite the development potential and needs of the detached housing business, relatively little research information exists on the role of institutions and practices of institutional actors affecting the performance of businesses especially from the perspective of homebuilders. In addition, since consumers make home purchasing decisions on the basis of imperfect information (Marsh & Gibb, 2011), special attention is paid to factors causing delays

in building processes by also taking into account the possible linkages of prefabrication to the extent of the challenges experienced by house purchasers. Related to this, the overall purpose of this study is to fill the existing gap in the research information on the role of institutional practices and means affecting the building processes of detached houses especially from the perspective of delays. Abreast with institutional theories (e.g., Selznik, 1996), the SHP framework (e.g., Ball & Harloe, 1992) is applied to structure the role of private home purchaser in the Finnish detached housing system. By tapping into a better understanding of the viewpoints of their customers, companies could seek possibilities to enhance their customer orientation during building projects and occupancy. Due to the strong traditions and consumer preferences for detached house ownership in Finland, the country provides an appropriate case territory for studying this phenomenon.

2. Detached housing markets globally and in Finland

In advanced economies, the housing market is a major branch of the economy from the perspectives of gross domestic production (GDP), construction sector employment and expenditures of households (MacLennan et al., 1998). Moreover, the sector significantly affects employment and economics in other sectors, such as the manufacturing industry, logistics and services (Giang & Sui Pheng, 2011). Regarding the proportion of different types of dwellings in the housing markets, approximately one quarter of people in the European Union (EU) live in owner-occupied homes and one third in detached houses (Eurostat, 2018). Thus, when comparing the characteristics of housing markets in Finland with some other European countries (Table 1), the proportion of detached houses in Finland is comparable to Sweden and the average in the EU, while in Germany the proportion of detached houses is considerably higher (i.e., approx. 50% of the dwellings).

Table 1. Examples of housing markets in different countries (mod. from Steinhardt et al., 2013).

Country	Prefabrication	Types of new houses
Finland Annual dwelling completions 36,000 (Statistics Finland, 2017)	Prefabrication of components and whole houses Offsite construction 70–75% of new detached houses (Omakotirakentaja 2016)	20% detached houses 70% multi-residential houses 10% other (Statistics Finland, 2017)
Sweden Annual dwelling completions 42,000 (Statistics Sweden, 2018)	Approx. 50-90% of house building is offsite (Fröjdfeldt & Leijon, 2008) Proportionally most commonly used in the manufacture of private, detached homes (Andersson, 2005, as cited in Steinhardt et al., 2013)	27% detached houses 73% multi-residential houses (Statistics Sweden, 2018)
Germany Annual dwelling completions 316,000 (Federal Statistics Office Germany, 2018)	13% of new residential building permits were for prefabricated buildings in 2016 17% prefabrication of detached or semi-detached houses, 4% multi-residential houses (Federal Statistics Office Germany, 2018)	38% detached or semi-detached houses 55% multi-residential houses 7% other (Federal Statistics Office Germany, 2018)

In Finland, the construction sector has represented roughly 6% of national GDP during the past five years (Statistics Finland, 2018a). In 2016, the construction sector generated turnover of 33 billion euros and employed 157 700 people (Statistics Finland, 2018b). Although preferences for housing in Finland have diversified (e.g., Gibler & Tyvimaa, 2014), most Finns still prefer detached house as their type of dwelling (e.g., Suomi Asuu, 2015).

The construction market in Finland has become rapidly concentrated in the Helsinki area and other biggest cities commonly seen as the future growth areas, whereas smaller towns and the countryside are seen to have very little growth potential. The Helsinki capital area covers almost half of all new residential apartments but only about 30% of new detached homes. Furthermore the six biggest cities and their neighboring communities cover about 90% of all new dwellings and about 70% of new detached homes. (Omakotirakentaja, 2016.)

Detached homes can thus be seen to being concentrated more towards urban areas although they are a logical choice for new house type in the rural area.

The trend towards urbanization in Finland is a major phenomenon affecting the demand for detached houses and construction business companies have recognized that there is a need for innovation activities to find urban solutions for housing (see, e.g., Tykkä et al., 2010). Opportunities for developing detached house building businesses exist, since detached house dwellers' preferences on the location and other characteristics of their homes are heterogeneous and affected by different types of lifestyle issues, for example (Gibler and Tyvimaa, 2014).

According to Omakotirakentaja (2016), building starts of new detached houses in Finland decreased by 47% in the 2000–2015 period (Figure 1) as urban planning has focused largely on multi-story buildings due to the population shift into the biggest cities. In the Finnish housing markets, roughly 7000 new detached houses were built in 2016. As a result of declining markets, the competition among house building companies has been intense during the whole of the 2000s, which has also increased the importance of pricing and product differentiation as factors of competitiveness. From companies' perspective, the sales processes are often long and expensive due to the high involvement of purchasers in planning processes and the common procedure among purchasers is to ask for several tenders from competing firms (Omakotirakentaja, 2016). The proportion of all building starts of new detached houses accounted for by new prefabricated houses increased steadily in the 2000–2015 period from 50% to 80% (Figure 1). Thus, from the perspective of innovations, detached house building companies in Finland can be considered as forerunners in prefabrication, which since the 1960s has been emphasized as an option to enhance the efficiency of production processes and customer orientation among the companies in the building business (Carter, 1967). Among the companies producing prefabricated houses in Finland (approx. 100 in total), the types of

prefabrication may vary by housing company and/or purchaser, ranging from the supply of bearing structures, for instance, to the finishing of the entire house, including its interiors.

A typical new detached home in Finland is built and occupied by the future homeowner. The average floorspace is 167m^2 (living space 142m^2) and two quarters of the houses are single storey buildings. In 2015, 68% of new detached homes were built in cities (6% in the center, 46% to conurbation and 16% in sparsely populated areas) and 32% in rural municipalities. The houses are usually simple: 50% of them have four corners and about 90% have less than eight corners. Despite this, most of the houses are customized (e.g., floor plan, material choices and interior fittings). Open kitchen – living room combination is common and most of the houses have built-in saunas and a fireplace. (Omakotirakentaja 2016.)

Regarding structural materials, over 80% of detached houses in Finland are made with wooden frames (Finnish Forest Industries Federation, 2010). Independently from type of buildings (e.g., detached or multi-storey houses), compared to other construction materials (i.e., concrete, steel and brick) (Schittich, 2005), the strength of wood as a building material is its lightness, which makes wooden components easy to manufacture and transport (Brege et al., 2014; Riala & Ilola, 2014).

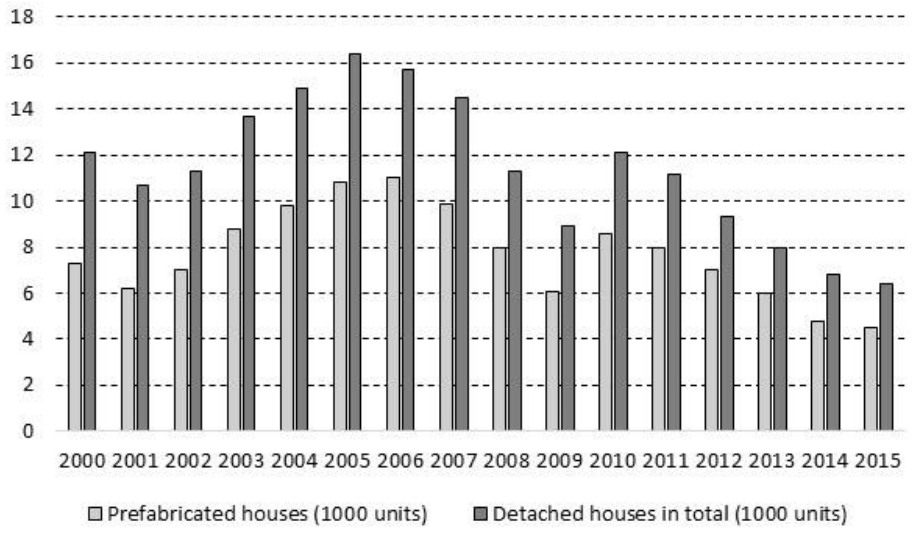

Figure 1. Building starts of detached and prefabricated houses in Finland in the 2000-2015 period (Omakotirakentaja, 2016).

The use of pre-manufactured timber-frame systems and extensive use of pre-assembled modules of internal house fittings are common for the housebuilding industries in timber-rich areas like Scandinavia and North-America (Ball, 2003). In addition, wood is commonly utilized also in other areas as a structural material for detached houses due to cultural traditions and other factors (Schittich, 2005). Due to this, there is strong potential for technological development and diffusion of prefabricated houses in the international markets.

However, the needs for business renewal are related not only to technologies such as uptake of prefabrication to increase efficiency and reduce costs, but also to increasing capabilities to create customer value and achieve price premiums (Barlow & Ozaki, 2003). In all, it would be vital for prefabricated detached housing companies to improve their understanding of issues such as consumers' personal situations and external circumstances in order to enhance the efficiency of the purchasing process and the possibilities of consumers to manage the risks when making the final purchasing choice (Koklic & Vida, 2011).

From the perspective of building processes, the multi-story and detached house building businesses are quite alike at the general level. However, when comparing the roles of home purchasers in multi-storey house and detached house businesses, the first hand owner of has multiple responsibilities in production (e.g., acquiring the lot, participating in the actual construction, choosing the contractors for the project, organizing tendering), consumption (e.g., choosing the solutions and materials according to personal preferences and needs) and exchange (e.g., acquiring the mortgage, making all the contracts and payments related to the project). Figure 2 illustrates the involvement of detached house purchaser in the phases of a Finnish detached house building project, which are connected to the theoretical framework of this study in the next chapter.

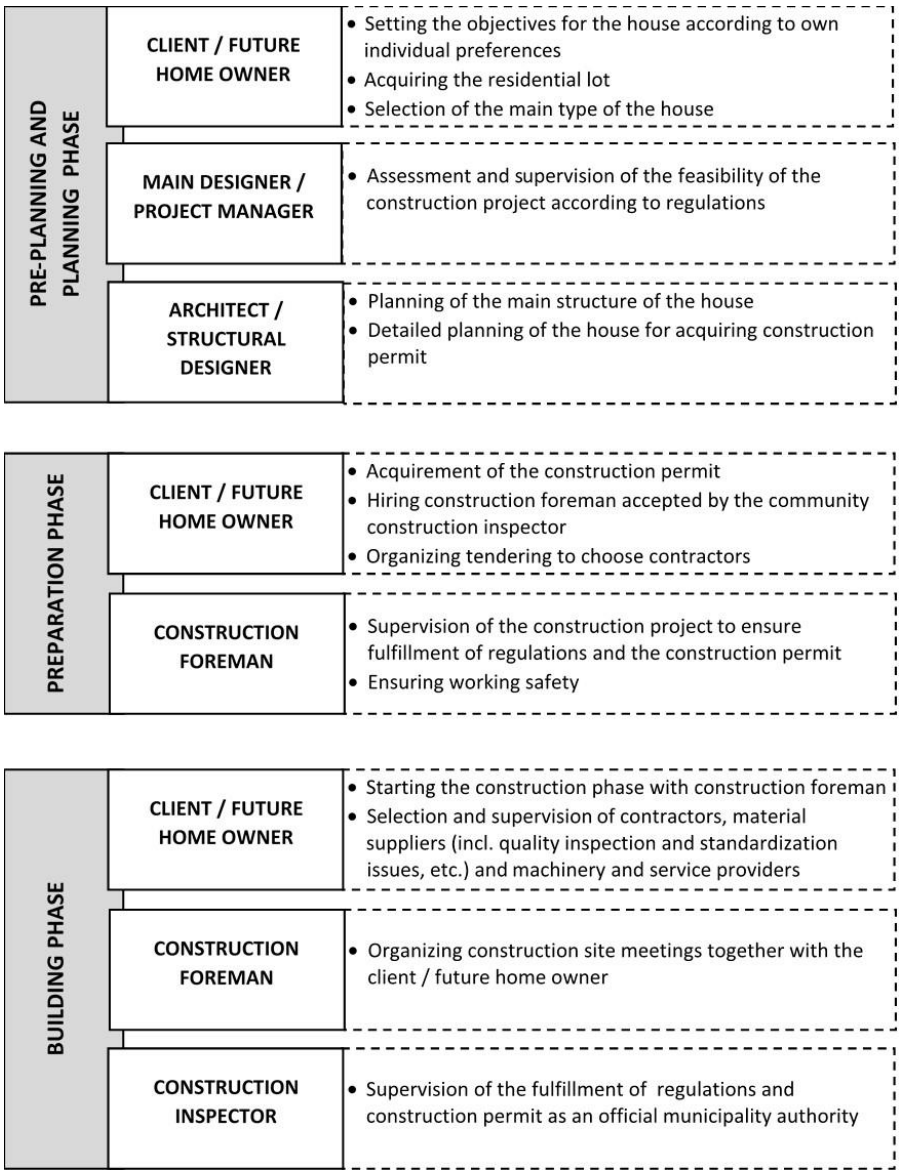

Figure 2. The main building process phases of a detached house in Finland (Puuinfo, 2009; Pientalorakentamisen kehittämiskeskus, 2016).

3. Theoretical background on institutions related to the Structures of Housing Provision (SHP)

Institutions can be defined as the humanly devised rules of the game in a society as well as the social structures that create, embody and enforce those rules (North, 1991; Ahuja & Yayavaram, 2011). Institutional theories focus on tracking the existence of "distinctive forms,

processes, strategies, outlooks, and competences, as they emerge from patterns of organizational interaction and adaptation" (Selznik, 1996). Related to this, one aim of institutional theories is to explain issues such as where the institutional elements arise, to what extent organizational structures are a result of institutionalization, and to what extent institutionalization improves organizational performance (e.g., Zucker, 1987).

According to institutional theories, organizations are influenced by normative pressures leading them to adopt similar patterns of behavior (Zucker, 1987), which increase coordination and reduce the need for information processing, thereby creating efficiency benefits. As information is necessary for any economic activity and none of the actors has more than limited range of expertise, institutions play vital role to reduce risk and uncertainty related to construction (Ball, 1998). In addition, since power is distributed unequally among individual actors in the social systems, collaboration is a form of being part of a network of relationships and communication flows (Booher & Innes, 2002). Yet, institutions also constrain behavior and hinder changes that might have positive impacts on industries in the form of innovation diffusion, for example (Kadefors, 1995; Eriksson, 2013).

The evolution of institutionalism can be traced back decades and in the course of its development, concepts of "old" and "new" institutionalism have emerged (Scott, 2008). In contrast to "old" institutionalism, which approaches development paths leading to institutional divergence, the "new" institutionalism addresses the issues of institutional homogenization (DiMaggio & Powell, 1983; Meyer & Rowan, 1977). According to DiMaggio & Powell (1983), the processes of homogenization can be approached by employing the concept of industrial isomorphism, which is composed of power (coercive isomorphism), attraction (normative pressures), and mimesis (mimetic processes). In addition, Beckert (2010) has added competition as a fourth mechanism of industrial isomorphism.

Institutions have a central role in both human interaction and how firms can do business by influencing, for example, their allocation of resources to productive, unproductive or even destructive activities (Baumol, 1990). Institutions are composed of regulative, normative and cultural-cognitive elements that add stability and meaning to social life. For example in the housing markets, the institutional environment is composed of political, environmental, social and demographic, economic, legal and administrative processes and norms, which separately and together affect the performance of the overall housing system (Burke, 2012). They are highly resilient to change, but can evolve over time and vary in different place or context (Scott, 2003). In addition, along with business organizations, political-legal institutions also cause isomorphic pressures such as by imitating "efficient" tax laws, labor laws, or environmental standards representing "regulatory competition" between states, which has become a central feature of political economies (Beckert, 2010).

Structures of Housing Provision (SHP) refer to the network of relationships associated with the provision of housing at specific point in time (as defined by Ball, 1998 in reference to SHP). In any country, SHP comprise spheres of production, consumption and exchange, which have evolved in the course of time forming country-specific features (Ball & Harloe, 1992). Based on the work of Ball (2003) and Burke and Hulse (2010) production sphere comprises, for example, mechanisms enabling supply of land through institutions affecting land use planning and land ownership abreast with business strategies and division of work within construction companies. In comparison, consumption is composed of, for example, purchasing and ownership preferences of housing and processes of households to purchase homes, while exchange is related, for example, to financial institutions governing monetary instruments enabling sale, renting and use of housing (Ball, 2003; Burke & Hulse, 2010).

According to Boelhouwer and van der Heijden (1993), SHP is not a theory on housing, but rather an approach for describing different housing structures to be further evaluated with

appropriate theories. For example, by combining the institutional theories with the SHP approach, comprehension on the institutional processes affecting the housing system functions may be deepened. From the perspective of SHP, institutions within the spheres of production, consumption and exchange are interlinked to each other through management systems (e.g., institutional practices and means of different actors) (Burke & Hulse, 2010). These interactions affect the governance of the whole SHP system (e.g., finance institutions, home purchasers, building developers, builders and public authorities) (Burke, 2012).

Thus, by connecting institutional theories with the SHP complex nature of housing system can be concretized. For example, impacts of particular institutions do not necessarily reflect only production, consumption or exchange spheres of the SHP, but simultaneously and to a varying extent all of them. As a result of this, when seeking for solutions for particular problems in the housing system (e.g., shortening delays in detached house building processes), understanding these interactions supports perceiving, which of the problems might be solved rather straightforwardly and which might require more profound scrutiny of the whole housing system. For example, in case of construction sector institutions (Kadefors, 1995) tendering system seem to affect production sphere, while governmental regulations have potential impacts on all spheres of SHP through housing policies and financial markets (see Table 2).

In addition, some institutions in the housing system are formal (e.g., norms and regulations on land use planning and building governed through legislation), while some are informal ones (e.g., established forms of operations to manage building processes within business networks) (e.g. Scott, 2003; Toppinen et al., 2019). The level of formality affects the management systems available for actors to govern the SHP (e.g., civil servants implementing land use policies *versus* private home builder bidding tenders), although there are still degrees of freedom for actors in choosing their institutional practices and means (Alexander, 2005). Thus, simultaneously with supporting the institutionalized myths (e.g., organizational image),

formal organizations are required to seek for flexibility to enhance efficiency of their managerial practices (Meyer & Rowan, 1977). As a result of this, there may be considerable variation in the institutional practices even within organizations with high level of formality.

Thus, enhancing comprehension on the causes of delays in the detached housing building processes requires consideration of not only institutions as such, but also their linkages to institutional practices and means of different actor governing the SHP spheres. This is especially relevant in the context of Finland, where the degree of formality of the institutions and the power of different actors to govern the management systems vary considerably. To summarize and depict the multi-dimensionality of the housing system in reference to the SHP and institutional theories, the conceptual linkages of institutions, actors, and management systems (i.e. institutional practices and means) are illustrated in Figure 3.

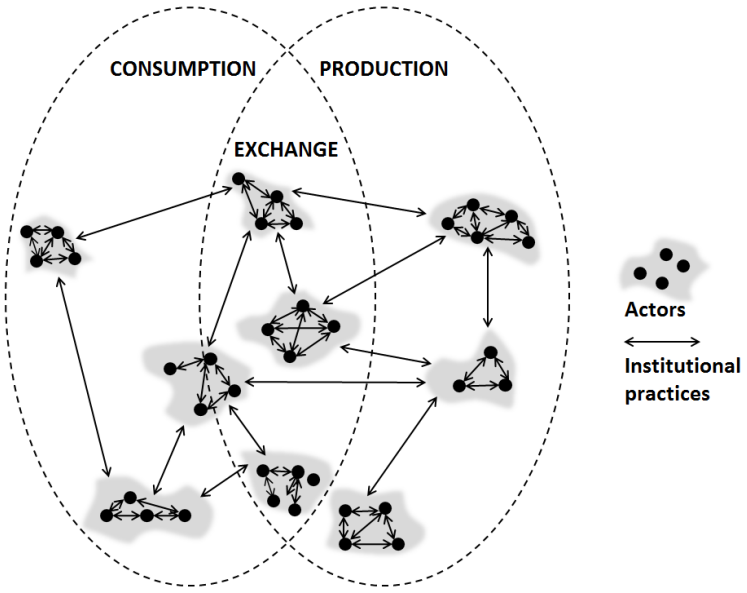

Figure 3. Institutional practices of actors within spheres of production, exchange and consumption in relation to SHP structures.

In the international business environment, economic processes and norms affect both production and consumption of dwellings (Burke, 2012), although the financial mechanisms

vary from one country to another due to differences in their national institutional settings (Österling, 2017). Generally, from home purchasers' point of view, economic institutions affect housing markets through mortgage loan issuance (Kutlukaya & Erol, 2016), which together with interest rates comprises the main driver for demand in the housing market (Warnock & Warnock, 2008). In comparison, housing production is more affected by institutions making decisions on the regulatory environment (e.g., land use policies and building norms) and structures of the construction sector, while the impacts of economic institutions are less straightforward (Warnock & Warnock, 2008). Housing suppliers may indirectly benefit from macroeconomic mechanisms by gaining market advantage through preferential market access or capital market inefficiencies, speculative land purchases and taxation factors (Ball et al., 2000).

Mortgage markets in Europe including Finland – are affected by legal and regulatory issues controlling the loan origination, consumer protection and enforcement of lenders' rights as well as urbanization (Kutlukaya & Erol, 2016). In the EU-level, the European Central Bank (ECB) controls financial markets by setting the basic frames to interest rates, which in turn sets the frame for Euribor rates. The 12-month Euribor is most widely used reference rate for housing loans in Finland. The Bank of Finland has reported that over 90% of all housing loans in the country were tied to Euribor rates in 2014 (Bank of Finland, 2014). Due to this the development of Euribor rates are important for the Finnish housing and construction sector. Another financial institution is the Third Basel Accord by the Bank for International Settlements, which sets framework on bank capital adequacy, stress testing, and market liquidity risk. After the housing bubble in the US in 2007–2009, the banks are more concerned on the collateral value of properties, which thereby has tightened the mortgage lending in Finland in the past couple of years especially in the rural areas.

Abreast with "traditional" economic processes and norms related to, for example, mortgage markets, nowadays the importance of global megatrends (e.g., climate change, urbanization and demographic changes) (e.g., Lützkendorf et al., 2011) have started to play increasingly critical role in the SHP through several institutional processes and norms emerging in international policies (e.g., European Commission, 2014; Ecodesign Directive, 2009). Although regulation has positive impacts on improving housing standards, enhancing sustainable development and creating business opportunities for forerunner building companies (e.g., Andersson et al., 2007; Lützkendorf et al., 2011), it may also cause additional costs, uncertainty and delays in the building processes (e.g., Al-Khalil & Al-Ghafly, 1999). Delays are among the most crucial obstacles to the success and performance of construction projects (Zarei et al., 2017).

Especially from the perspective of home purchasers, inefficient regulation has been found to decrease the diversity of supply of dwellings in the housing market (Puustinen & Kangasoja, 2009) and delimit the possibilities of house buyers to make choices of their own in their home design (Gibler & Tyvimaa, 2014). From the house builders' point of view, impractical regulation increases construction costs and decreases the possibilities for innovation diffusion (Puustinen & Kangasoja, 2009), which have been found to be crucial for mind-set renewal in the construction sector (e.g., Holt, 2013). All in all, compared to less-regulated housing markets, in the areas of extensive land use regulation the amount of new building starts has been found to be 45% lower (Mayer & Somerville, 2000).

The next goal to be achieved by 2020 is the introduction of so-called net zero energy balance (NZEB) buildings that will produce all the energy they require on-site. In case of detached houses located in northern European countries such as Finland, achieving NZEB requires the development of innovative energy systems for buildings (Mohamed et al., 2014). In the construction sector, these required advancements in technologies may create new

business opportunities for forerunner companies if their impacts on purchasers can be communicated, such as their possibilities to enhance the quality of living (Lützkendorf et al., 2011; Toppinen et al., 2018).

Institutions and individual actors with their practices affect the potential for renewal for the construction industries (Rasmussen et al., 2017). Abreast with industrial building, for example needs related to sustainable construction and enhancement on customer orientation are driving the needs for changing the detached housing business. For empirical categorization of the construction sector institutions, a framework introduced by Kadefors (1995) is being employed. The framework consists of six elements of institutions: "Governmental regulations," "Tendering system," "Formal standardization initiated by the industry," "Standardization of skills and knowledge," "Roles and interest organizations" and "Learning and routine". In Table 2, the categorization of institutions is supplemented with examples on the roles of different actors as well as their means and practices (Scott, 1987) in the detached house building processes. At the phase of qualitative analysis, information in Table 2 is employed to identify and evaluate the potential causes of delays faced by Finnish detached house builders by taking into account also the connections of institutional practices to SHP system.

Table 2. Institutions in the construction sector combined with examples of their linkages to means and practices of institutional actors (modified from Kadefors 1995).

Institution	Actor(s)	Practices and means
1. Governmental regulations	EU-level, national, regional and local officials and politicians	EU-directives, national and local regulation and policies affecting eg,housing policy, urban planning and financial markets. Ensuring that good practices are being followed in building permit procedures, building supervision, technical solutions and usage of buildings (e.g., Land Use and Building Act (132/1999))
2. Tendering system	Future homeowners, main contractors and sub-contractors	Competitive bidding systems, established/familiar contractor contacts. Using bidding processes to find an optimal combination of suppliers for a given construction project, for instance (e.g. Hatush & Skitmore, 1997).
3. Formal standardization initiated by the industry	Industrial and standards associations, manufacturers and suppliers, EU authorities and officials	Guidelines, accreditations, formal sertifications and terms of delivery. Assuring that components and technologies are applicable with each other independently from selected suppliers in the bidding processes (Dubois & Gadde, 2002)
4. Roles and interest organizations	Industrial associations and non-governmental organizations	Lobbying and guidelines for practitioners, voluntary sertifications and reporting systems. Facilitation of knowledge diffusion throughout the construction sector and provision of normative directions for member companies and other organizations, such as through negotiations and lobbying (Vermeulen et al., 2007)
5. Standardization of skills and knowledge	Home manufacturers, main designer, contractors, consultants, project manager, project supervisor, construction foremen, clients and future homeowners.	Information exchange and experience, formal and informal education. Trial and error, development of new practices. Enhancing capabilities to re-engineer construction processes and define new “best practices” without compromising efficient and error-free project implementation (Roy et al., 2005).
6. Learning and routines	All the above	Social skills and informal collaboration among actors. Communication capabilities. Developing social patterns, practices and processes that support the dissemination of information and knowledge diffusion between separate projects, and also enhancing the uptake of new routines and process innovation capabilities as, for example, customer needs become more diverse (Bresnen, 2003).

4. Material and methods

The material of this study (Table 3) is composed of survey data gathered in January 2015 as a part of Rakennustutkimus RTS Oy's "Omakotirakentaja" series of surveys carried out annually since 1983. The data gathering process was targeted by phone interviews at 2,404 families, who in the fall 2014 had acquired building permit in Finland to start a detached house construction project.

Table 3. The material of the study.

<table>
<tr><th>Initial sample</th><th>Data gathering process</th><th>Final data</th></tr>
<tr><td rowspan="4">2,404 people were contacted twice by phone*</td><td>772 people could not be reached after two attempts</td><td rowspan="4">Responses of 661 people on three questions for further analysis:

Question 1:
"Have you had major delays from the original schedule in your building project? If so, what kinds of problems were these and what are your views on the reasons for the problems?"

Question 2:
"Have you faced problems in acquiring the plot? If so, what kinds of problems were these and what are your views on the reasons for the problems?"

Question 3:
"Have you faced problems related to acquiring the building permit? If so, what kinds of problems were these and what are your views on the reasons for the problems?"</td></tr>
<tr><td>485 refused to participate in the study</td></tr>
<tr><td>181 interrupted the interview during the phone conversation</td></tr>
<tr><td>305 were disqualified for various reasons (e.g., the person provided an incorrect phone number or construction was not relevant to them</td></tr>
</table>

**The contact information of the sample was ordered from the Population Register Centre (http://vrk.fi/en/frontpage), which in Finland in the official authority to manage population information system.*

In all, the survey consisted of 24 questions, of which questions on the level of prefabrication progress of the building project were addressed in the analysis of this study. The data analysis was implemented both quantitatively and qualitatively in three stages as described in Table 4.

The quantitative analysis was based on calculus of frequencies and the statistical nonparametric Mann-Whitney U test (also known as Wilcoxon rank sum test), executed with

IBM SPSS Statistics software to check whether statistical indications on connections between the existence of major building delays and the level of prefabrication could be found. The motivation for using nonparametric test procedure was twofold: First, Mann-Whitney U Test does not assume that the data in each group tested would be taken from normally distributed populations. Second, it is appropriate to be utilized in cases where calculus of mean is not statistically justified (e.g., ordinal data on occurrence of building delays and level of prefabrication) (Berenson et al., 2002).

In qualitative analysis, data thematization was employed to add comprehension on the magnitude of institutional practices as factors having negative effects on detached house building projects. As a method, thematization suits for evaluating a specific phenomenon in concrete contexts, especially as it asks respondents to describe their internally meaningful experiences without predetermined structures (Holloway and Todres, 2003). In this study, thematization was employed both as data-driven and theory-driven approaches to check what kinds of categories of delays could be identified independently from theoretical assumptions, and what could be recognized in reference to theoretical background on institutions and SHP.

Table 4. The three stages of data analysis implemented with quantitative and qualitative approaches.

	Purpose of analysis	**Data coding**	**Methods of analysis**
First stage (Information on the level of prefabrication and Question 1)	Information on occurrence of building delays	0=No, no major building delays 1=Yes, major building delays	Frequencies of respondents with and without experiences on building delays by level of prefabrication of their houses (Quantitative approach) Mann-Whitney U test to assess statistically the connections between experiences on building delays and level of prefabrication of the houses (Quantitative approach)
	Information on the level of prefabrication in purchased houses purchased	0=No information on the level of prefabrication 1=No prefabrication, 2=Some level of prefabrication (i.e., building structures, but not interiors) 3=High level of prefabrication (i.e., building structures and also all or most of the interiors)	
Second stage (Questions 2 and 3)	General information on the occurrence of delays especially at planning and preparation phases of the building project	Data-driven thematization	Frequencies of experiences on different types of general delays (Quantitative and qualitative approach)
Third stage (Question 1)	Detailed information on causes of building delays during different building project phases	Theory-driven thematization in reference to Kadefors (1995) and SHP	Frequencies of experiences on delays caused by different institutional practices (Quantitative and qualitative approach)

5. Results concerning institutions affecting the performance of detached home building processes

5.1 Prefabrication and general causes for delays

According to the results of the first stage of analysis, altogether 168 interviewees, representing 26% of the 661 respondents, had experienced major delays in their building projects (question 1). From the perspective of the role of prefabrication, the results in Table 3 suggest that the occurrence of major building delays had not differed by level of prefabrication (i.e., percentages of the level of prefabrication were quite alike between the respondents without and

with experiences of delays). This finding is also supported by the results of the Mann-Whitney U test for independent samples, according to which no indications of statistically significant differences between the groups were detected (p-value=0.754). Based on this, the level of prefabrication was regarded to be irrelevant from the perspective of analysis of the role of institutions as factors causing building delays. In addition, compared to the proportion of prefabricated house building starts in the Finnish detached house markets in 2014 (71%), the share of prefabrication (i.e., some level or high level of prefabrication) in the material of the study (69.7%) is almost the same (see Figure 1 and Table 5).

Table 5. Frequencies and proportions of groups of respondents by experiences of major building delays and the level of prefabrication of the purchased detached house.

	No information on the level of prefabrication	**No prefabrication**	**Some level of prefabrication**	**High level of prefabrication**	**Total**
No, no major building delays	13 (2.6%)	132 (26.8%)	220 (44.6%)	128 (26.0%)	**493 (100 %)**
Yes, major building delays	9 (5.4%)	46 (27.4%)	68 (40.5%)	45 (26.8%)	**168 (100%)**

The second stage of analysis was more specifically related to the more detailed question 2 (i.e., issues with the plot) and question 3 (i.e., issues with the building permit), providing information at a general level on the issues that had caused major delays especially in launching the detached house building projects. In all, 122 interviewees (18%) had faced problems with the plot (question 2) and 109 (16%) with building permits (question 3). Geographically, the respondents that had experienced delays represented the whole of continental Finland. Thus, no geographic differences were identified in the occurrence of building process delays between

different areas of Finland. The general reasons for delays mentioned by the respondents and the proportions of the 168 respondents with experiences of those delays are illustrated in Figure 4.

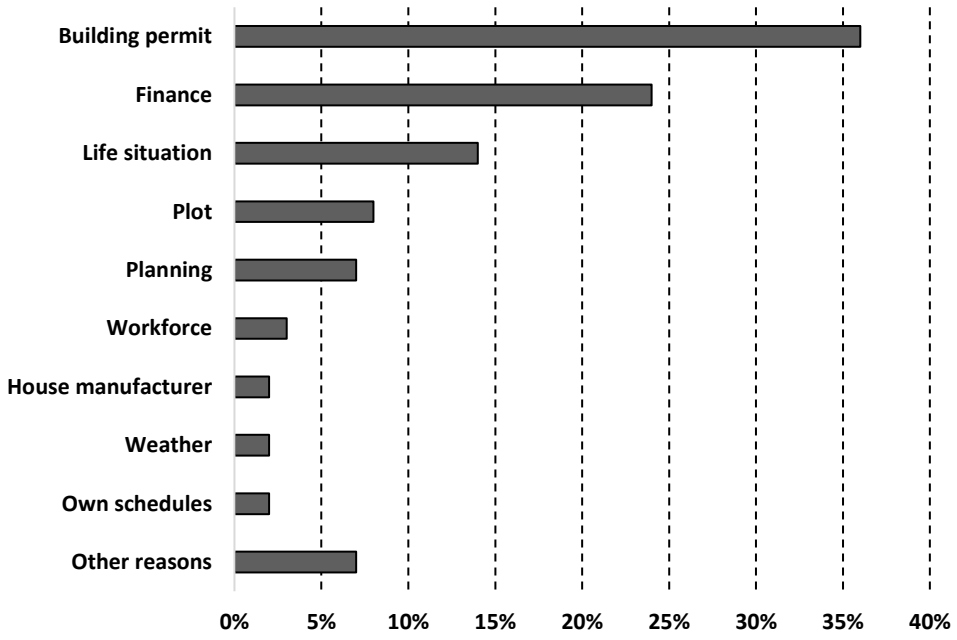

Figure 4. Experiences of different types of delays in detached house building projects faced by the respondents (n=168).

Based on the experiences of the respondents, the most important single cause of delays in house building projects (over 35% of the respondents) stemmed from issues related to building permits, while problems with finance also had quite notable impacts (close to 25% of the respondents) on the performance of the processes. From the perspective of the institutional practices, building permits are related both to the legal and administrative processes and norms (i.e., governmental regulations) within the SHP (Figure 3) production sphere. In addition, the result concerning financing as a factor commonly affecting performance in building projects is in line with the previous literature (Warnock & Warnock, 2008), emphasizing the major role

of mortgage loan issuing and interest rates as drivers for exchange and consumption for housing in the SHP system. However challenges with finance can be related both to governmental regulation related to financial markets and purchasers' individual financial management and/or budgeting skills affecting their possibilities to receive mortgage. Thus interpreting what the respondents mean as "finance problems" in the data is ambiguous.

Apart from institutional practices, the general life situation of the respondents had a considerable effect (close to 15% of the respondents) on construction processes. However, as unexpected changes in life (e.g., the birth of a child, divorce or lack of time) are often beyond one's control, results related to them can be considered to be part of the general risks involved in home building projects (e.g., Mulder & Lauster, 2010) related to the consumption sphere of SHP. All in all, the processes under the responsibility of suppliers of the dwellings (i.e., planning, workforce and house manufacturer) played a relatively minor role overall in the different types of delays faced by the respondents.

5.2. Institutional practices as specific causes for delays

The final and third stage of analysis comprised data categorization of detailed descriptions and views of the reasons behind the problems experienced by respondents, especially with respect to institutional practices within the construction sector (Kadefors, 1995) by also considering their linkages to the SHP (e.g., Ball & Harloe, 1992). In all, a total of 115 respondents (i.e., 68% of the respondents with experiences of some types of delays) mentioned in their answers issues, which in the analysis were associated with practices of construction sector institutions.

Delays caused by institutional practices had impacts on either one or several building project phases (Figure 2). Although most of the respondents specified only one type of delay they had experienced during their building project, there were 14 interviewees who had faced several types of delays in their projects. Due to that, the sum of frequencies for delays

mentioned by the respondents (Table 6) is higher than the total number of respondents with experiences of institutional types of delays (n=115).

Table 6. Frequencies for different types of delays in reference to individual institutions at different building process phase(s).

Institution	Preplanning and planning phase	Preparation phase	Building phase	Total
Governmental regulations	8	43	4	55
Tendering system	-	1	7	8
Formal standardization initiated by the industry	5	3	-	8
Roles and interest organizations	-	-	-	0
Standardization of skills and knowledge	48	8	11	67
Learning and routine	2	1	1	4

As illustrated in Table 6, institutional practices connected to "Standardization of skills and knowledge" (e.g., deficiencies in capabilities to organize and to keep on schedule and understand the risks of financing the project) was the most important cause for delays, especially during the planning phase. In reference to SHP, the result indicates deficiencies in the production sphere of the detached housing system. The result is logical, as the detached house building projects are managed by homebuilder families as a difference, for example, to industrial multi-storey construction processes managed where professional building developers are responsible for organization of work. Abreast with the practices mainly under responsibility of the homebuilders themselves (e.g., organization of work in planning phase), institutional practices linked to "Governmental regulations" governed by public officials within the production spheres of the SHP very frequently caused delays in building projects, especially during the preparation phase (e.g., the slow bureaucracy involved in obtaining a building permit).

In addition, the respondents mentioned practices related to "Tendering system" (e.g., problems with the contractors, subcontractors or house building company), "Formal standardization initiated by the industry" (e.g., challenges with the designers making the plans for the house) and "Learning and routine" (e.g., lack of "chemistry" between the actors). In reference to SHP, these issues are also connected organization of work within production sphere illustrating well the two-fold role of homebuilders in the detached house construction sector business. Compared to industrial building, in detached house building the future home owners are not only within the consumption sphere of the SHP system, but through involvement in management of building processes also strongly involved in the production sphere.

However, the practices related to "Tendering system", "Formal standardization initiated by the industry" and "Learning and routine" were notably less common causes for delays than the ones related to "Governmental regulations" or "Standardization of skills and knowledge." In some cases, problems with certain institutional practices reflected in several building project phases. For example, one respondent had faced challenges in building a type of detached house that is relatively new in Finland, as many actors lacked the necessary know-how, which cumulatively affected the overall performance of the building project (i.e., many kinds of deficiencies had emerged in "Learning and routine").

All in all, the interrelationships between the institutional causes of delays and project phases were quite clearly related to an individual building project phase and practices connected to one type of institution and its practices. Examples of the typical problems by building project phases mentioned by the respondents are illustrated in the quotes below:

Preplanning and planning phase

"Standardization of skills and knowledge": Respondent #5 *"Selling the old apartment did not proceed as was hoped"* or Respondent #82 "*Problems with the bank in securing a mortgage loan*."

"Governmental regulations": Respondent #3 "*Preparation of the city plan took years*" or Respondent #32 "*Changes in the city plan.*"

Preparation phase

"Governmental regulations": Respondent #95 "*Acquiring the building permit took six weeks more than promised*" or Respondent #35 "*Summer holidays of the city [planning] employees."*

"Standardization of skills and knowledge": Respondent #75 "*Paperwork was demanding"* or Respondent #167 "*Official paperwork."*

Building phase

"Standardization of skills and knowledge": Respondent #6 "*Maybe a little, when doing-it-yourself, the schedule has been stretched*" or Respondent #144 "*More excavation work was required on the building site than expected."*

"Tendering system": Respondent #34 "*[Problems in] acquiring the excavator postponed the preparation of the foundation*" or Respondent #139 "*Receiving tenders was scarce.*"

To supplement the results concerning the impacts of practices within individual institutions on delays, the existence of adverse effects on building performance caused simultaneously by modes of operations within two institutions were also examined. In all, 16 respondents (14% of the total amount of respondents who had experienced some delays) had encountered challenges in the building projects that from the perspective of analysis had characteristics of practices executed in two institutions. Regarding the contribution to the results, the explanations for the causes of delays in these cases were probably less ambiguous and as such were expected to provide some insights into the dynamics between the institutions and the risks they caused for home purchasers.

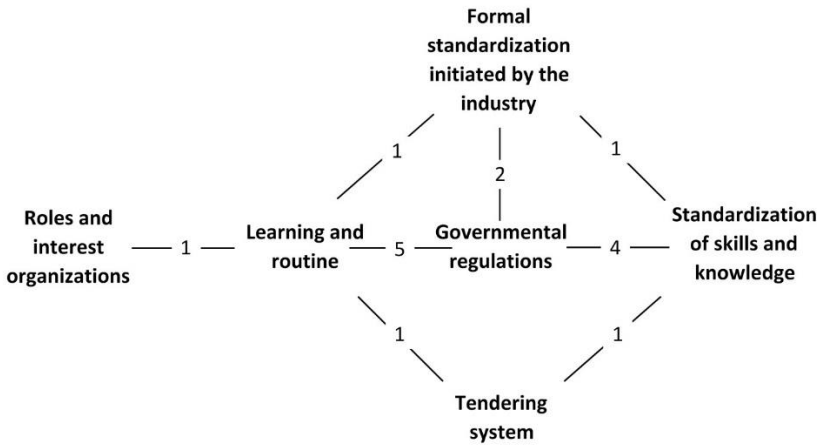

Figure 5. Building delays caused by combinations of two institutions. The numbers on the lines are the frequencies for observations (n=16).

All of the responses linked to practices characterized by two institutions were intertwined with "Governmental regulations," "Learning and routine" or "Standardization of skills and knowledge." The result is in line with the outcome of the analysis of individual institutions, in which the practices of these three institutions within the production sphere of the SHP system were found to mostly affect building project delays (Table 3). Yet, compared to the results concerning the impacts of individual institutions, in cases where multi-faceted problems were encountered, the role of purchasers' personality or personal preferences seemed to play a bigger role along with actual issues related to institutional practices. In addition, the relationships with causes and consequences seemed to be less clear, as the following quotes illustrate:

"Governmental regulations" and "Learning and routine": Respondent #59 "*Complaints and dismissals of a neighbor"* or Respondent #112 "*Inability of [community] building supervisors to collaborate."*

"Governmental regulations" and "Standardization of skills and knowledge": Respondent #7 "*An appropriate lot has not been found"* or Respondent #25 "*Finding a lot for the type of house chosen delayed the project for two months."*

All of the issues mentioned above may have been strictly related to characteristics of institutional practices. For example, in Finland, the hearing of neighbors is an official part of the building permit application process, and especially in case of deviations from the official city plan, permission from the neighbors is required (Land Use and Building Decree, 1999). Thus, challenges in the interface of "Governmental regulations" and "Learning and routine," for instance, may be caused by inflexibilities of the regulatory system or deficiencies in formal social patterns to enhance communication between different actors (e.g., detached house builder, community building supervisors and neighbors). In that case, even though the delays resulted from a combination of two types of institutions, the reasons behind them would still have been institutional ones. However, another explanation for the delays could be that the home purchasers had unrealistic preferences in terms of the characteristics and location of the house from the perspective of the city plan or neighboring milieu. In that case, the institutions would not have been the actual cause of the delays.

Similarly, the quotes linked to "Governmental regulations" and "Standardization of skills and knowledge" may illustrate either deficiencies in the norms and processes of institutions or problems caused by the house purchasers themselves. Challenges in finding a lot may have stemmed from reasons such as problems among authorities to provide land for building, which also reflects deficiencies in the processes and routines of the city planning system (production sphere in the SHP). Yet, this is not the only possible explanation – such delays may also have been caused by the purchasers' decision to choose the wrong type of house with respect to the city plan – maybe even despite the instructions given by the authorities (consumption sphere in the SHP). Thus, as a concluding remark, by employing the data of this study it is not possible to present unambiguous results on multi-institutional issues to develop detached house building processes or manage risks related to them.

6. Discussion

The purpose of this study was to address institutional practices as causes of delays on detached house building processes in the context of Finland. In all, 168 (26%) of the respondents had faced general building project delays mostly connected to building permits, finance and general life situation. In addition, from purchasers' viewpoint, practices associated with the construction sector institutions were found to be important causes of detached house building project delays (altogether 68% of the all experiences on delays) at different phases of project implementation.

From *theoretical point of view*, the identified connections between institutional structures (Kadefors, 1995) and empirical building project phases gave indications on the applicability of institutional approach in studying the detached house building within the SHP system. However, theoretical development would be needed to describe more transparently the roles of particular actors within and between specific institutions. This would allow illustrating, how different actors with their real-life practices are actually positioned in the SHP system affecting also implementation and outcomes of building processes. In this research, a preliminary examination on that was made by positioning the results in the SHP framework. In a broader context and future research, this approach might bring new avenues for analyzing the obstacles and drivers of change in the housing markets.

Based on the findings and in reference to the SHP, for homebuilder families most of the identified causes of delays were caused by institutional practices of public authorities or homebuilders' own skills within production sphere. The result on the role of public authorities in building delays indicates that the level of formality of a particular institution does not necessarily mean well-functioning institutional practices. Instead, high level of institutionalization may produce inefficiencies (see Meyer and Rowan, 1977). Compared to aspects in production, issues linked to exchange sphere played a minor role (e.g., financing for

house building). In addition, problems connected solely to consumption sphere (e.g., inability to make decisions on purchasing or unavailability of appropriate house models) were not mentioned at all.

In reference to the SHP, the results showed that in the context of Finnish detached home building processes, production and consumption spheres are closely intertwined to each other. Due to that, the usage of SHP seemed to provide useful insights on the multi-dimensional nature of institutions, practices and means affecting the detached house purchasing system especially in the context of Finland. As a difference to the speculative building processes (i.e., professional builders act as managers in the production sphere), Finnish homebuilder families have two-fold position both as customers in the consumption sphere and organizers of work in the production sphere. In order to better illustrate the fuzzy boundaries between different spheres within the SHP system, in future studies comparisons with branches of business with similar roles of clients as managers and purchasers might be useful.

Regarding *managerial implications,* an important outcome is that although the detached house building process is characterized by complexity (i.e., many issues linked to preplanning and planning, preparation and building phases), the processes handled by house building companies had functioned quite well. In all, less than 5% of delays could be identified to be caused by the companies. According to the results, the level of prefabrication did not have a statistically significant relationship with the occurrence of major building project delays. Thus, from the perspective of potential business development towards even higher levels of prefabrication, the result indicates that as such there are no special business risks related to the level of prefabrication from purchasers' point of view in relation to construction sector institutions.

Compared to industrial building processes (e.g., multi-story houses) managed by professional building developers, the detached house building processes are run by private

house purchasers usually without any professional education in construction. Moreover, since detached houses are usually built as one-off projects, purchasers do not gain any benefits from institutional accumulation of knowledge and skills. This creates a knowledge gap between different actors in the construction process and prohibits institutional practices related to "Learning and Routines" to strongly involve or evolve in the process. This is a major difference compared to other building types in the structures of housing provision and tends to decrease the quality of construction (see, e.g., Ball, 1998). To develop the project organization in the detached house business, building companies could take a bigger role as a "node" of information sharing and in diffusion of skills, such as through provision of services, which would enhance the risk management among purchasers and companies themselves. For example, if purchasers were more familiar with the bureaucracy and documentation needed during the building process along with the financial requirements and general issues related to scheduling, the processes of individual purchasers would become more predictable also from building companies' point of view.

In addition to finding individual-level solutions to manage the challenges faced by purchasers, another approach to dealing with the deficiencies in knowledge could be to develop more purposefully the business models of area construction. In that business model, a house building company takes the key role as a professional building developer to build an area of detached houses. As a result of this, there would be no need for individual purchasers to take responsibility for issues that in multi-story building projects belong to professionals. This could also lead to an increase in new types of dwellings in the markets (e.g., townhouses, which are currently uncommon in Finland). From companies' point of view, taking more responsibilities in the preplanning, planning and preparation phases would also mean more power to manage uncertainties caused by purchasers due to unrealistic or unsuccessful house design choices related to city plans, for instance. As the results concerning the impacts of two institutions on

the building project delays showed, purchasers as actors in a construction sector system may also be the actual drivers of delays, for instance in cases where they do not follow the binding norms or processes of different institutions.

If considered as obstacles within companies, especially processes and norms in "Governmental regulations" and "Standardization of skills and knowledge" may discourage the development of innovations (see, e.g., Blayse and Manley, 2004; Gibler & Tyvimaa, 2014; Lähtinen et al., 2019). However, based on the results, there are possibilities to discover new business solutions in the detached house markets by approaching from new angles the roles of different actors in the building projects.

The limitation of the study is the fact that the results of this study are based only on experiences of house purchasers in one country (Finland) in one year (2014), they provide only a limited view of the phenomena of delays caused by institutions in the detached house markets. However, the Finnish detached house markets – in which there is a rather high level of prefabrication and needs for business renewal, for instance in meeting diversifying consumer needs (e.g., Gibler & Tyvimaa, 2014) – represent a good case for obtaining preliminary insights into the potential issues to be studied in other geographic contexts. From the perspective of empirical information, in the future it would be valuable to gather comparative material from several countries to support understanding of consumer needs and challenges in different geographic areas.

Acknowledgements

The authors thank Rakennustutkimus RTS Oy for providing the survey data for this research. We are also grateful for the two anonymous reviewers for their comments on the earlier versions of this article.

Literature

Ahuja, G. & Yayavaram, S. (2011) Perspective — Explaining influence rents: The case for an institutions-based view of strategy, *Organization Science*, 22(6), pp. 1631–1652. https://doi.org/10.1287/orsc.1100.0623

Alexander, E. R. (2005) Institutional Transformation and Planning: From Institutionalization Theory to Institutional Design. *Planning Theory*, 43(3): 209–223. DOI: 10.1177/1473095205058494

Al-Khalil, M., & Al-Ghafly, M. (1999) Important causes of delay in public utility projects in Saudi Arabia, *Construction Management Economics*, 17(5), pp. 647–655. https://doi.org/10.1080/014461999371259

Andersson, D. (2005) *Prefabricerade väggelement med pelar-balkstomme.* Examsarbete. Luleå Tekniska Universitet, Luleå, Sweden. In Swedish. Available: http://www.diva-portal.org/smash/get/diva2:1018972/FULLTEXT01.pdf (accessed 3 May 2018)

Andersson, E., Naumanen, P., Ruonavaara, H. & Turner, B. (2007) Housing, socio-economic security and risks: A qualitative comparison of household attitudes in Finland and Sweden, *European Journal of Housing Policy*, 7(2), pp. 151–172. https://doi.org/10.1080/14616710701308547

Ball, M. (1998). Institutions in British property research: a review. Urban Studies, 35(9), pp. 1501–1517.

Ball, M., Farshchi, M. & Grill, M. (2000) Competition and the persistence of profits in the UK construction industry, *Construction Management and Economics* 8(7), pp. 733–745. https://doi.org/10.1080/014461900433023

Bang, H.L., Bonke, S., & Clausen, L. (2001) Innovation in the Danish construction sector: The role of public policy instruments, in: A. Manseau & G. Seaden (Ed) *Innovation in construction: an international review of public policies*, pp. 129–164 (London: Spon Press).

Bank of Finland (2014). Over 90% of new housing loan agreements tied to Euribor rates. Available: https://www.suomenpankki.fi/en/Statistics/mfi-balance-sheet/older-news/2014/over-90-of-new-housing-loan-agreements-tied-to-euribor-rates/ (accessed 15 February 2019).

Barlow, J. & Ozaki, R. (2003) Achieving 'Customer Focus' in Private Housebuilding: Current Practice and Lessons from Other Industries, Housing Studies, 18(1): 87–101, DOI: 10.1080/0267303032000076858

Baumol, W. (1990) Entrepreneurship: productive, unproductive, and destructive, *Journal of Business Venturing*, 1(1), pp. 3–22. https://doi.org/10.1016/0883-9026(94)00014-X

Beckert, J. (2010) Institutional isomorphism revisited: Convergence and divergence in institutional change, *Sociological Theory*, 28(2), pp. 150–166. https://doi.org/10.1111/j.1467-9558.2010.01369.x

Berenson, M.L., Levine, D.M. & Krehbiel, T.C. (2002) Basic business statistics – Concepts and applications. 8. Edition. Prentice Hall, New Jersey. ISBN 0-13-090300-0. pp. 348–390.

Blayse, A. M. & Manley, K. (2004) Key influences on construction innovation, *Construction Innovation*, 4(3), pp. 143–154. https://doi.org/10.1108/14714170410815060

Booher, D. E. & Innes, J. E. Network power in collaborative planning, *Journal of Planning Education and Research*, 21(3), pp. 221–236.

Brege, S., Stehn, L. & Nord, T. (2013) Business models in industrialized building of multi-storey houses, *Construction Management and Economics*, 32(1–2): 208–226. https://doi.org/10.1080/01446193.2013.840734

Bresnen, M., Edelman, L., Newell, S., Scarbrough, H. & Swan, J. (2003) Social practices and the management of knowledge in project environments, *International Journal of Project Management,* 21(3), pp. 157–166. https://doi.org/10.1016/S0263-7863(02)00090-X

Boelhouwer, P. & van der Heijden, H. (1993) Methodological trends in international comparative housing research, Netherlands journal of housing and the built environment, 8(4), pp. 371–382.

Burke, T. (2012) The Australian residential housing market: Institutions and actors, in: R. Tomlinson (Ed). *Australia's Unintended Cities: The Impact of Housing on Urban Development*, pp. 35–48 (Melbourne: CSIRO Publishing)

Burke, T. & Hulse, K. (2010) The institutional structure of housing and the sub-prime crisis: An Australian case study, *Journal of Housing Studies*, 25(6), pp. 821–838. https://doi.org/10.1080/02673037.2010.511161

Carter, J. (1967) Components and architect, *RIBA Journal*, November, pp. 476–477.

Coolen, H. & Hoekstra, J. (2001) Values as determinants of preferences for housing attributes, *Journal of Housing and the Built Environment*, 16(3–4): pp. 285–306.

DiMaggio, P., & Powell, W. (1983) The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields, *American Sociological Review*, 48(2), pp. 147–160. DOI: 10.2307/2095101

Dubois, A. & Gadde, L. (2002) The construction industry as a loosely coupled system: implications for productivity and innovation, *Construction Management & Economics*, 20(7), pp. 621–631. https://doi.org/10.1080/01446190210163543

Ecodesign Directive (2009) DIRECTIVE 2009/125/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 21 October 2009 establishing a framework for the setting of ecodesign requirements for energy-related products. Available: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32009L0125&from=EN (accessed 3 May 2018)

Eriksson, P. E. (2013) Exploration and exploitation in project-based organizations: Development and diffusion of knowledge at different organizational levels in construction companies, *International Journal of Project Management*, 31(3), pp. 333–341. https://doi.org/10.1016/j.ijproman.2012.07.005

European Commission (2014) Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on the resource efficiency opportunities in the building sector. COM(2014) 445 final. Available: http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52014DC0445&from=EN (accessed 3 May 2018).

Eurostat (2018) Statistics on housing. Available: http://ec.europa.eu/eurostat/statistics-explained/index.php/Housing_statistics#Type_of_dwelling (accessed 3 May 2018).

Federal Statistics Office Germany (2018) Building permits in structural engineering: Germany, years, construction activities, type of building. Available: https://www-genesis.destatis.de (accessed 14 April 2018).

Finnish Forest Industries Federation (2010) Wood construction is a solution. Puurakentaminen on ratkaisu. Available: https://www.metsateollisuus.fi/mediabank/477.pdf (accessed 3 May 2018).

Fröjdfeldt, I., & Leijon, A. (2008) *Prefabricerade Byggelement: En konceptbeskrivning*. Examensarbete i Byggnadsteknik University of Gävle, Gävle. In Swedish. Available: http://www.diva-portal.se/smash/get/diva2:120233/FULLTEXT01.pdf (accessed 30 April 2018).

Giang, D. T. H. & Sui Pheng, L. (2011) Role of construction in economic development: Review of key concepts in the past 40 years, *Habitat International*, 35(1), pp. 118–125. https://doi.org/10.1016/j.habitatint.2010.06.003

Gibler, K. M. & Tyvimaa, T. (2014) The potential for consumer segmentation in the Finnish housing market, *The Journal of Consumer Affairs*, 48(2), pp. 351–379. https://doi.org/10.1111/joca.12037

Gram-Hanssen, K. & Bech-Danielsen, C. (2004) House, home and identity from a consumption perspective, *Housing, Theory and Society*, 21(1), pp. 17–26. DOI:10.1080/14036090410025816

Hasu, E. (2018) Housing decision-making process explained by third agers, Finland: 'we didn't want this, but we chose it', *Housing Studies*. https://doi.org/10.1080/02673037.2017.1408785

Hatush, Z. & Skitmore, M. (1987) Criteria for contractor selection, *Construction Management and Economics*, 15(1), pp. 19–38. https://doi.org/10.1080/014461997373088

Holloway, I. & Todres, L. (2003) The status of method: flexibility, consistency and coherence, *Qualitative Research*, 3(3), pp. 345–347.

Holt, G. D. (2013) Construction business failure: Conceptual synthesis of causal agents, *Construction Innovation*, 13(1), pp. 50–76. https://doi.org/10.1108/14714171311296057

Kadefors, A. (1995) Institutions in building projects: Implications for flexibility and change, *Scandinavian Journal of Management*, 11(4), pp. 395–408. https://doi.org/10.1016/0956-5221(95)00017-P

Kauko, T., Hooimeijer, P. & Hakfoort, J. (2002) Capturing housing market segmentation: An alternative approach based on neural network modelling, *Housing Studies*, 17(6), pp. 875–894. DOI: 10.1080/02673030215999

Koklic, M. K. & Vida, I. (2011) Consumer strategic decision making and choice process: prefabricated house purchase, *International Journal of Consumer Studies*, 35(6), pp. 634–643. DOI: 10.1111/j.1470-6431.2010.00953

Kristiansen, K., Emmitt, S. & Bonke, S. 2005. Changes in the Danish construction sector: The need for a new focus, *Engineering, Construction and Architectural Management*, 12(5), pp. 502–511. DOI: 10.1108/09699980510627180

Kutlukaya, M. & Erol, I. (2016) Analysis of cross-country variations in the depth of European mortgage markets, *Journal of Housing and the Built Environment*, 31(3), pp. 513–543.

Lähtinen, K., Toppinen, A. & Malm, N. 2019. Effects of Lobbying Among Urban Planners in Finland - Views on Multi-Storey Wooden building, *BioProducts Business*, 4(7): 77–92.

Land Use and Building Act (1999) Available: https://www.finlex.fi/fi/laki/kaannokset/1999/en19990132.pdf (accessed 3 May 2018).

Land Use and Building Decree (1999) Available: https://www.finlex.fi/en/laki/kaannokset/1999/en19990895.pdf (accessed 3 May 2018).

Leishman, C. (2001). House building and product differentiation: An hedonic price approach. *Journal of Housing and the Built Environment* 16: 131–152, 2001.

Leishman, C. (2015). Housing supply and suppliers: Are the microeconomics of housing developers important?, *Housing Studies*, 30(4), pp. 580–600. DOI: 10.1080/02673037.2015.1021767

Levy, D.S., Murphy, L. & Lee, C. K.C. (2008) The influence of family members on housing purchase decisions, *Housing Studies*, 23(2), pp. 271–289. https://doi.org/10.1108/14635780410550885

Lindberg, E., Gärling, T. & Montgomery, H. (1989) Belief-value structures as determinants of consumer behaviour: A study of housing preferences and choices, *Journal of Consumer Policy*, 12(2), pp. 119–137.

Lovell, H. & Smith, S. (2010) Agencement in housing markets: The case of the UK construction industry, *Geoforum*, 41(3), pp. 457–468. https://doi.org/10.1016/j.geoforum.2009.11.015

Lützkendorf , T., Fan, W. & Lorenz, D. (2011) Engaging financial stakeholders: opportunities for a sustainable built environment, *Building Research & Information*, 39(5), pp. 483–503. https://doi.org/10.1080/09613218.2011.597206

MacLennan, D., Muellbauer, J. & Stephens, M. (1998) Asymmetries in housing and financial market institutions and EMU, *Oxford Review of Economic Policy*, 14(3), pp. 54–80. https://doi-org.proxy.uwasa.fi/10.1093/oxrep/14.3.54

Marsh, A. & Gibb, K. (2011) Uncertainty, expectations and behavioural aspects of housing market choices, *Housing, Theory and Society*, 28(3), pp. 215–235. DOI: 10.1080/14036096.2011.599182

Mayer, C. & Somerville T. (2000) Land use regulation and new construction. *Regional Science and Urban Economics*, 30(6), pp. 639–662. https://doi.org/10.1016/S0166-0462(00)00055-7

Meyer, J. W., & Rowan, B. (1977) Institutionalized organizations: Formal structure as myth and ceremony, *American journal of sociology*, 83(2), pp. 340–363. https://doi.org/10.1086/226550

Mohamed, A., Hasan, A. & Sirén, K. (2014) Fulfillment of net-zero energy building (NZEB) with four metrics in a single family house with different heating alternatives, *Energy*, 114, pp. 385–399. https://doi.org/10.1016/j.apenergy.2013.09.065

Mulder, C. H. & Lauster, N. T. (2010) Housing and family: An introduction, *Housing Studies*, 25(4), pp. 433–440. DOI: 10.1080/02673031003771109

Naumanen, P. & Ruonavaara, H. (2016) Why Not Cash Out Home Equity? Reflections on the Finnish Case, Housing, Theory and Society, 33(2): 162–177, DOI:10.1080/14036096.2015.1095234

Norris, M. & Domański, H. (2009) Housing conditions, states, markets and households: A Pan-European Analysis, *Journal of Comparative Policy Analysis: Research and Practice*, 11(3), pp. 385–407. https://doi.org/10.1080/13876980903158027

North. D. (1991) Institutions, *Journal of Economic Perspectives,* 5(1), pp. 97–112. DOI: 10.1257/jep.5.1.97

Omakotirakentaja 2016. (2016) Helsinki: Rakennustutkimus RTS Oy. Unpublished document. In Finnish.

Österling, A. 2017. Housing Markets and Mortgage Finance. Stockholm University, Department of Economics. Doctoral dissertation. 284 p. Available: http://su.diva-portal.org/smash/get/diva2:1115245/FULLTEXT01.pdf

Pientalorakentamisen kehittämiskeskus (2016) Laadukkaan pientalon rakennuttaminen. In Finnish. Available: http://www2.prkk.fi/files/upload_pdf/3741/pt_rakennuttaminen.pdf (accessed 3 May 2018)

Puuinfo (2009) Pientalorakentajan perustieto. In Finnish. Available: http://www.puuinfo.fi/sites/default/files/pientalorakentajan-perustieto-2-2.pdf (accessed 3 May 2018)

Puustinen, S. & Kangasoja, J. (2009) URBA Project: Developing new urban housing concepts in the Helsinki Metropolitan Area, in M. Homer, A. Price, J. Bebbington & E. Rohinton (Ed) *Second International Conference on Whole Life Urban Sustainability and Its Assessment.* Conference Proceedings SUE-MoT-Conference 2009, pp. 452–470 (Leicestershire: Loughborough University).

Rasmussen, G., Jensen, P. & Gottlieb, S. (2017) Frames, agency and institutional change: the case of benchmarking in Danish construction, *Construction Management and Economics*, 35(6), pp. 305–323. https://www.tandfonline.com/doi/ref/10.1080/01446193.2017.1298824?scroll=top

Riala, M. & Ilola, L. (2014) Multi-storey timber construction and bioeconomy – barriers and opportunities, *Scandinavian Journal of Forest Research*, 29(4), pp. 367–377. DOI: 10.1080/02827581.2014.926980

Roy, R., Low, M. and Waller, M. 2005. Documentation, standardization and improvement of the construction process in house building. *Construction Management and Economics*, 23(1), pp. 57–67. https://doi.org/10.1080/0144619042000287787

Ruonavaara, H. (1996a). Exclusion from home ownership in Finland. Empirical and theoretical explorations, 13(1):, 47-52, DOI: 10.1080/02815739608730397

Ruonavaara, H. (1996b). The home ideology and housing discourse in Finland 1900–1950, *Housing Studies*, 11(1), pp. 89–104. https://doi.org/10.1080/02673039608720847

Schittich, C. (2005) The single-family house: Myth and reality, in: C. Schittich (Ed) *In detail – Single family houses*, pp. 8–12 (Munich: Kösel GmbH & Co. Altusried-Krudzell)

Scott, W. R. (1987). The adolescence of institutional theory. *Administrative science quarterly*, 493-511.

Scott, W. R. (2003). Institutional carriers reviewing modes of transporting ideas over time and space and considering their consequences. *Industrial and corporate change*, 12(4), pp. 879-894.

Scott, W. R. (2008) Approaching adulthood: the maturing of institutional theory, *Theory and Society*, 37(5), pp. 427–442.

Segerstedt, A. & Olofsson, T. (2010) Supply chains in the construction industry, *Supply Chain Management: An International Journal*, 15(5), 347–353. https://doi.org/10.1108/13598541011068260

Selznik, P. (1996) Institutionalism "old" and "new", *Administrative Science Quarterly*, 41(2), pp. 270–277. DOI: 10.2307/2393719

Statistics Finland (2017) Building and dwelling production [e-publication]. ISSN=1798-9590. Helsinki: Statistics Finland. Available:

http://pxnet2.stat.fi/PXWeb/pxweb/en/StatFin/StatFin__rak__ras/statfin_ras_pxt_001.px/?rxid=96053902-f7e5-4d09-adb2-a770a38c8fa0 (accessed 3 May 2018).

Statistics Finland (2018a) Annual national accounts. Available: https://www.stat.fi/til/vtp/index_en.html (accessed May 3 2018)

ISSN=1798-0623. Helsinki: Statistics Finland Available: http://www.stat.fi/til/vtp/index_en.html (accessed January 1 2018).

Statistics Finland. 2018b. Structural business and financial statement statistics. Available: https://www.stat.fi/til/yrti/2016/yrti_2016_2017-09-21_en.pdf (accessed January 5 2018).

Statistics Sweden (2018) Completed dwellings in newly constructed buildings by type of building, tenure and period. Available: http://www.scb.se (accessed April 10 2018).

Steinhardt, D. A., Manley, K., & Miller, W. (2013) *Profiling the nature and context of the Australian prefabricated housing industry*, pp. 20–22 Available: https://www.qut.edu.au/research/research-projects/prefabricated-green-housing (accessed May 3 2018).

Suomi Asuu 2015 (2015) Unpublished document. Helsinki: Rakennustutkimus RTS Oy. In Finnish.

Toppinen, A., Röhr, A., Pätäri, S., Lähtinen, K. & Toivonen, R. (2018) Regulation or end-user demand as drivers for sustainability? A Delphi study on the wooden multistory construction in Finland and Sweden towards 2030. *Journal of Forest Economics*, 31, pp. 3–10. https://doi.org/10.1016/j.jfe.2017.05.001

Toppinen, A., Sauru, M., Pätäri, S., Lähtinen, K. & Tuppura, A. (2019) Internal and external factors of competitiveness shaping the future of wooden multistorey construction in Finland and Sweden. *Construction Management & Economics*, 37(4), pp. 201–216. https://doi.org/10.1080/01446193.2018.1513162

Tykkä, S., McCluskey, D., Nord, T., Ollonqvist, P., Hugosson, M., Roos, A., Ukrainski, K., Nyrud, A.Q. & Bajric, F. (2010) Development of timber framed firms in the construction sector — Is EU policy one source of their innovation?, *Forest Policy and Economics*, 12(3), pp. 199–206. https://doi.org/10.1016/j.forpol.2009.10.003

Warnock, W.C. & Warnock, F. E. (2008) Markets and housing finance, *Journal of Housing Economics* 17(3), pp. 239–251. https://doi.org/10.1016/j.jhe.2008.03.001

Vermeulen, P., Büch, R. & Greenwood, R. (2011) The impact of governmental policies in institutional fields: The Case of Innovation in the Dutch Concrete Industry, *Organization Studies,* 28(4), pp. 515–540.

Vesa, M. (2014) "*Innovaatiotoiminnan johtaminen rakennustuoteteollisuudessa*". Tampereen teknillinen yliopisto. Julkaisu 1251. Juvenes Print – Suomen Yliopistopaino Oy, TTY 2014. ISSN 1459-2045. Doctoral dissertation. In Finnish. Available: https://tutcris.tut.fi/portal/files/1939115/vesa.pdf (accessed 3 May 2018).

Zarei, B., Sharifi, H. & Chaghouee, Y. (2017) Delay causes analysis in complex construction projects: a Semantic Network Analysis approach, *Production Planning & Control,* 29(10), 29–40.

Zucker, L. G. (1987) Institutional theories of organization, *Annual Review of Sociology*, 13, pp. 443–464.